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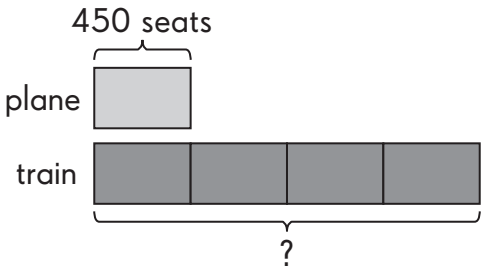
CHAPTER 9 Using Bar Models: Multiplication and Division

Lesson 9.1 Real-World Problems: Multiplication

Solve. Draw bar models to help you.

1. A plane has 450 seats.
There are 4 times as many seats on the train as on the plane.
How many seats are there on the train?



2. A refrigerator costs 5 times as much as a television.
The television costs $429.
What is the cost of the refrigerator?

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Solve. Draw bar models to help you.

3. Town X is 329 kilometers away from Town Y.
Town Z is 9 times as far from Town Y as Town X is.
How far is Town Z from Town Y?

4. There are 965 marbles in the box.
There are 8 times as many marbles in the container as in the box.
How many marbles are there in the container?

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Lesson 9.2 Real-World Problems: Two-Step Problems with Multiplication

Solve. Draw bar models to help you.

1. Lilian sold 457 tickets to the fair.
Jamie sold 3 times as many tickets as Lilian.

a. How many tickets did Jamie sell?

b. How many fewer tickets did Lilian sell than Jamie?

2. The students in Class 3A buy 500 packets of seeds to start an eco-garden.
On Monday, they use 27 packets of seeds.
On Tuesday, they use twice as many packets of seeds as on Monday.
How many packets of seeds do the students have left?

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Solve. Draw bar models to help you.

3. Mrs. Johnson buys 68 posts and some wire to make a fence.
Each post costs $7.
The wire costs $46.
How much does Mrs. Johnson pay for the posts and the wire?

4. Alice has 168 marbles.
Ben has 4 times as many marbles as Alice.
Cindy has 28 more marbles than Ben.

a. How many marbles does Ben have?

b. How many marbles does Cindy have?

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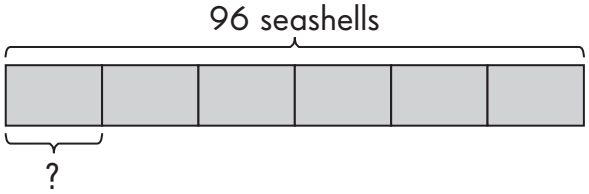
Lesson 9.3 Real-World Problems: Division

Solve. Draw bar models to help you.

1. At the beach, 6 children pick up a total of 96 seashells.
They share the seashells equally.
How many seashells does each child have?



2. Desmond and Melissa collect cards.
They have 92 cards in all.
Melissa has three times as many cards as Desmond.
How many cards does Desmond have?

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Solve. Draw bar models to help you.

3. Lynette spends $95 on a pair of shoes and a purse.
The pair of shoes costs 4 times as much as the purse.
How much does Lynette pay for the purse?

4. A bookshelf has 84 books on it.
There are 2 times as many non-fiction books as fiction books.
How many fiction books are there on the bookshelf?

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Lesson 9.4 Real-World Problems: Two-step Problems with Division

Solve. Draw bar models to help you.

1. Sophia prepares 38 cheese sandwiches and 46 tuna sandwiches.
She puts the sandwiches equally onto 3 platters.
How many sandwiches are on each platter?

2. Maria has $500.
She buys a pair of shoes for $108.
She gives the rest of the money to her 4 nieces.
Her nieces share the money equally.

a. How much money does Maria give to her 4 nieces?

b. How much does each niece get?

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Solve. Draw bar models to help you.

3. Kevin buys a dining table and 8 identical chairs for $294.
The table costs $198.
How much does each chair cost?

4. A florist buys 4 boxes of carnations.
There are 21 carnations in each box.
The florist puts the carnations into bouquets of 6 carnations each.
How many bouquets of carnations are there?

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Solve. Use letters to represent the unknown numbers.

5. Joan baked 15 muffins.
Kenny baked 2 times as many muffins as Joan.
Cynthia baked 12 more muffins than Kenny did.

a. How many muffins did Cynthia bake?

b. How many muffins did the three children bake altogether?

6. There are 200 chairs in a school hall.
Michael removes some chairs from the hall.
He arranges the rest of the chairs in 10 rows.
Each row has 16 chairs.
How many chairs does Michael remove?

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Solve. Use letters to represent the unknown numbers.

7. Matthew and May want to buy a birthday present for their mother.
May has 3 times as much money as Matthew.
The birthday present costs $50.
After buying the birthday present, they have $70 left.
How much money does Matthew have at first?

8. There are 66 students going on a field trip in 2 buses.
Bus A has 6 more students than Bus B.
Each bus has 2 teachers.
How many teachers and students are there in Bus B?

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Put On Your Thinking Cap!

Solve. Show your work.

1. A store records the sales of its toys in the table below.

Month	Number of Toys Sold
January	180
February	90 more than in January
March	3 times as many as in February
April	320 fewer than in March

a. How many toys are sold in February?

b. How many toys are sold in March?

c. How many toys are sold in April?

d. How many toys are sold altogether during the four months?

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Solve. Show your work.

2. Teresa and Nancy make 135 pins for a fund-raising project.
Teresa makes 37 more pins than Nancy.
How many pins does Teresa make?

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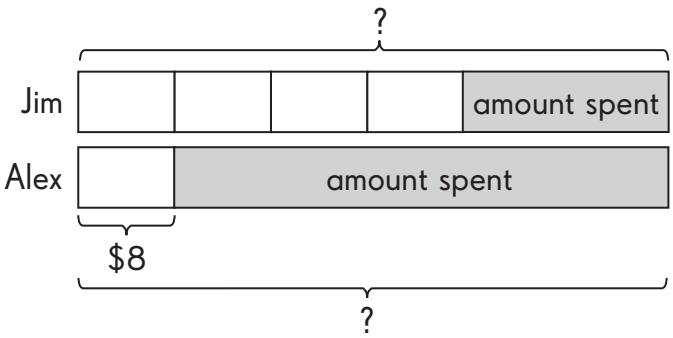
3. Alex and Jim have equal amounts of money.
Each day, Alex spends $5 and Jim spends $3.
When Alex has $8 left, Jim has 4 times as much money left as Alex.
How much money does each boy have at first?



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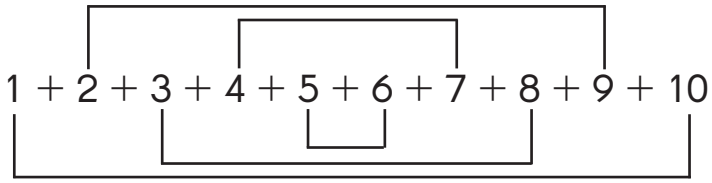
4. Find an easy way to add the numbers from 1 to 10.



Each pair of numbers shown above has a sum of 11.

So, $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 11 \times 5$

$= 55$

Using the above method, find the sums of the following numbers.

a. $1 + 2 + 3 + 4 + 5 + ... + 17 + 18 + 19 + 20$

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b. 1 + 2 + 3 + 4 + 5 + ... + 37 + 38 + 39 + 40

c. 11 + 22 + 33 + 44 + 55 + 66 + 77 + 88 + 99

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Fill in the missing digits to make the statements true.

5. The table explains divisibility tests. You can tell if a number is divisible by 2, 3, 4, 5, 9, or 10 by looking at the number's digits.

A number is divisible by ...	... if ...
2	the ones digit is even (0, 2, 4, 6, or 8).
5	the ones digit is 0 or 5.
10	the ones digit is 0.
4	the last two digits of the number are divisible by 4.
3	the sum of the digits of the number is divisible by 3.
9	the sum of the digits of the number is divisible by 9.

Example

The number 9,864 is divisible by 9 because the sum of the digits is divisible by 9.
$9 + 8 + 6 + 4 = 27$
27 is divisible by 9.

a. 7 _____ 6 is divisible by 3.

b. 9 _____ 2 is divisible by 4.

c. 27 _____ is divisible by 5.

d. 9 _____ 4 is divisible by 3.

e. 59 _____ is divisible by 4.

f. 53 _____ is divisible by 2.

g. 6 _____ 4 is divisible by 9.

h. 7 _____ 8 is divisible by 4.

i. _____ 57 is divisible by 9.

j. 9 _____ 8 is divisible by 9.

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